

REMARKS

Favorable reconsideration of this application, in light of the following discussion and in view of the present amendment, is respectfully requested.

Claims 1-19 are pending in the application.

Applicants are appreciative of the indication by the Examiner, as of the interview of September 14, 2006, that because Griffin does not appear to discuss all the features of independent claims 1, 8 and 9, a new search will be necessary. A summary of the material discussed in the interview is included below.

I. Rejection under 35 U.S.C. 103

In the Office Action at page 2, claims 1-19 were rejected under U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,900,727 to Griffen et al. in view of Japanese Patent Pub. No. 2001-317966. This rejection is respectfully traversed because the combination of Griffin and JP '966 does not suggest at least:

a plurality of signal generating members for generating mutually different signals, any selected one of said signal generating members being able to be attached in an exchangeable manner to a rotary body; and

wherein said plurality of signal generating members are respectively formed in such a manner that numbers of signal-cycles and signal-intervals in signals generated during a unit rotation of respective signal generating members are different from each other, while products of said numbers of signal-cycles multiplied by said signal-intervals in said signals are generally identical to each other,

as recited in independent claim 1, the combination of Griffin and JP '966 does not suggest at least:

a first signal generating member for generating a first signal, said first signal generating member being able to be attached to a rotary body, in a manner as to be exchangeable with a second signal generating member for generating a second signal different from said first signal;

wherein said first signal generating member is formed in such a manner that a number of signal-cycles and a signal-interval in said first signal generated during a unit rotation of said first signal generating member is different from a number of signal-cycles and a signal-interval in said second signal generated during a unit rotation of said second signal generating member, while a product of said number of signal-cycles multiplied by said signal-interval in

said first signal is generally identical to a product of said number of signal-cycles multiplied by said signal-interval in said second signal,

as recited in independent claim 8, and the combination of Griffin and JP '966 does not suggest at least:

at least two signal generating members, each signal generating member exchangeably attachable to the rotary body, each signal generating member having approximately the same outer diameter as the other signal generating members and each including a signal generating element having a signal-generation pitch different from the other signal generating members,

as recited in independent claim 9.

As a non-limiting example, an embodiment of the present invention as set forth in claim 1, for example, is directed to a rotary kit that includes signal generating members for generating mutually different signals and a signal sensing unit arranged in close proximity to one of the signal generating members. The signal generating members are formed such that numbers of signal-cycles and signal-intervals in signals generated during rotation of respective signal generating members are different from each other, while products of the numbers of signal-cycles multiplied by the numbers of signal-intervals are generally identical to each other.

Griffen discusses a rotary pulse generator kit for monitoring the rotation of a shaft including three different magnetic drums able to be attached to a hub 20, where the peripheral surface 50 of each of the drums 24, 24', 24" is provided with magnetic patterns 58 and 60 that are arranged in two peripheral "tracks". Each of the drums 24, 24', 24" encode different pulses per revolution where each of the drums have slightly different diameters to ensure that all three drums have the same magnetic pitch (or spacing). Griffen further includes a sensor module 30 that has sensors 94, 96 that will be axially aligned with the tracks of the drums 24, 24', 24" when the kit is assembled.

The Examiner alleges that Griffen discloses that "the plurality of pulse generating members are respectively formed in such a manner that numbers of cycles and –intervals in pulses generated during a unit rotation of respective pulse generating members are different from each other, while products of the numbers of pulse-cycles multiplied by the pulse-intervals in the pulses are generally identical to each other." The Applicants respectfully disagree. Griffen discusses that drums 24, 24' and 24" are each encoded with different pulses per revolution, but all have slightly different diameters to insure that all three drums have the same magnetic pattern pitch. Griffen further discusses that the sensor elements A1-A4 of sensors 94, 96 of the sensor module 30 are spaced at a pitch determined by the pitch of the magnetic drum pattern.

Griffen does not, however, discuss or suggest the use of pulse generating members formed so that numbers of signal-cycles and signal-intervals generated during a unit rotation of respective signal generating members are different from each other, and does not discuss or suggest that products have the numbers of signal-cycles multiplied by the signal-intervals are generally identical to each other. As all the drums in Griffen have the same pattern with the same spacing, but are different diameters, the number of signal-intervals of respective signal generating members will not be different from each other. The number of signal-cycles may be different due to the varying diameter, but the number of signal-intervals is the same.

The present specification specifically discusses the problems associated with such a scenario, specifically noting that "in order to increase the number of signal-cycles per unit rotation, it is effective that a signal-generation pitch (e.g., the pitch of magnetized patterns) is reduced while the diametral size of the annular track of the signal generating element (e.g., the outer diameter of the signal generating member) is not changed, or alternatively, that the diametral size of the annular track is increased while the signal-generation pitch is not changed." The specification additionally notes that "[h]owever, if the diametral size of the annular track of the signal generating element is increased, the outer diameter of the signal generating member may be increased accordingly...[and thus] it may be necessary to change the location of the other components of the rotary encoder (e.g., the signal sensing unit) in order to ensure the space for placing the signal generating member."

Griffen discusses the use of drums where the drums all have the same magnetic pitch, but have different diameters. Thus, Griffen does not discuss or suggest that the numbers of signal-cycles and signal-intervals in signals generated during a unit rotation of respective signal generating members are different from each other, while products of numbers of signal-cycles multiplied by signal-intervals in the signals are generally identical to each other.

In addition, the Examiner alleges that Griffen discloses pulse generating members having approximately the same outer diameter as the other pulse generating members and each including a pulse generating element having a pulse-generation pitch different from the other pulse generating members. Griffen clearly physically shows in Fig. 1 that the drums 24, 24', 24" all have different diameters. As previously discussed, the drums all have the same magnetic pattern pitch. Additionally, Griffen specifically states that "[t]hese drums have slightly different diameters to insure that all three drums have the same magnetic pattern pitch (or spacing).

Further, as conceded by the Examiner, Griffen does not suggest that the drums are signal generating members.

The Examiner suggests that JP '966 makes up for the deficiencies in Griffen. JP '966

discusses a kit-type encoder in which an encoder body is attached to an object 2 to be measured. The encoder body of JP '966 is provided with a code-plate unit 3 and an encoder unit 101 which reads out the code of the code-plate unit 3. JP '966 does not, however, discuss or suggest a plurality of signal generating members that are respectively formed in such a manner that numbers of signal-cycles and signal-intervals in signals generated during a unit rotation of respective signal generating members are different from each other, while products of said numbers of signal-cycles multiplied by said signal-intervals in said signals are generally identical to each other, and does not discuss or suggest a plurality of signal generating members, each having approximately the same outer diameter as the other signal generating members and each including a signal generating element having a signal-generation pitch different from the other signal generating members, as recited in independent claims 1, 8 and 9.

In addition, the Examiner alleges that "it would have been obvious to one of ordinary skill in the art at the time the invention as made to use a signal generating member or pulse generating member in a kit of rotary encoder would provide similar results." The Examiner as not set forth any motivation to combine the references, as is required in establishing a *prima facie* case of obviousness. The phrase "would provide similar results" is not a motivation to combine references. Also, in establishing a *prima facie* case of obviousness, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See M.P.E.P. § 2142. It is unclear as to a motivation cited that was found in the prior art and not based on the applicants' disclosure.

Further, it is entirely unclear as to why one of ordinary skill in the art would have combined a code-plate unit 3 that has code read by an encoder unit 101 with a rotary pulse generator kit which includes a plurality of drums all having different diameters, but the same pitch. There appears to be no such suggestion or motivation to combine the teachings of the two references, specifically to teach the features of providing a plurality of signal generating members formed so that numbers of signal-cycles and signal-intervals in signals generated during a unit rotation of respective signal generating members are different from each other, while products of the numbers of signal-cycles multiplied by the signal-intervals in the signals are generating identical to each other, as recited in claim 1, for example. In addition there is certainly no suggestion or motivation to combine the two references to teach at least two signal generating members, each signal generating member having approximately the same outer diameter as the other signal generating members and each including a signal generating element having a signal-generation pitch different from the other signal generating members, as

recited in claim 9, for example.

Therefore, as the combination of Griffen and JP '966 does not discuss or suggest a "plurality of signal generating members [that] are respectively formed in such a manner that numbers of signal-cycles and signal-intervals in signals generated during a unit rotation of respective signal generating members are different from each other, while products of said numbers of signal-cycles multiplied by said signal-intervals in said signals are generally identical to each other," as recited in independent claim 1 and similarly in claim 8, and does not discuss or suggest "at least two signal generating members, each signal generating member exchangeably attachable to the rotary body, each signal generating member having approximately the same outer diameter as the other signal generating members and each including a signal generating element having a signal-generation pitch different from the other signal generating members," as recited in independent claim 9, and as the motivation to combine the references is inadequate to suggest such a combination, claims 1, 8 and 9 patentably distinguish over the references relied upon. According, withdrawal of the § 103(a) rejection is respectfully requested.

Claims 2-7 and 10-19 depend either directly or indirectly from independent claims 1, 8 and 9 and include all the features of their respective independent claims, plus additional features that are not discussed or suggested by the references relied upon. For example, claim 7 recites that "each of said plurality of signal generating members includes a signal generating element comprising at least one magnetized pattern." Therefore, claims 2-7 and 10-19 patentably distinguish over the references relied upon for at least the reasons noted above. According, withdrawal of the § 103(a) rejection is respectfully requested.

Conclusion

In accordance with the foregoing, claims 1-19 are pending and under consideration.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

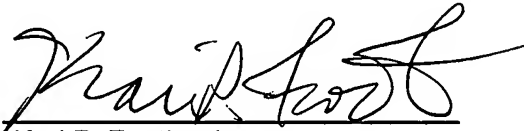
Respectfully submitted,

STAAS & HALSEY LLP

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9/15/06

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